

phenylene vinylene, and derivatives thereof, and that as Matsushita shows the claimed structural features, the recitation of high conductivity is regarded as being inherently met. Applicants respectfully disagree with the Examiner concerning this ground of rejection for the reasons to be set forth hereinbelow.

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Keen (U.S. Patent No. 6,326,215), since the Examiner asserted that although Keen does not note that derivatives are selected from the group consisting of C1-C10 alkyl-, C1-C10 alkoxy-, halo-, nitro-, cyano-, and ester-substituted monomers, it would have been obvious to one having ordinary skill in the art to use any of the said derivatives in the device of Keen at the time the invention was made since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Applicants respectfully disagree with the Examiner concerning this ground of rejection for the reasons to be set forth hereinbelow.

The Examiner also rejected claims 4 and 5 under 35 U.S.C. 103(a) as being unpatentable over Keen (U.S. Patent No. 6,326,215) in view of Matsushita (JP 2000-133854), since the Examiner stated that although Matsushita does not describe derivatives which comprise derivatives that generate high-conductivity conjugated polymers when polymerized or derivatives which are selected from the group consisting of C1-C10 alkyl-, C1-C10 alkoxy-, halo-, nitro-, cyano-, and ester-substituted monomers, it would have been obvious to one having ordinary skill in the art to employ derivatives that generate high-conductivity conjugated polymers when polymerized in the invention of Matsushita as taught by Keen since this is a feature which can be tailored in a structure, thus making the device employing it more versatile. Applicants respectfully disagree with the Examiner concerning this ground of rejection for the reasons to be set forth hereinbelow.

Reexamination and reconsideration are respectfully requested.

Briefly, the present invention includes the preparation of highly conductive conjugated polymers and their use in actuators. As defined in the Merriam-

Webster Dictionary (Merriam-Webster OnLine), "actuator" means "one that actuates; specifically: a mechanical device for moving or controlling something."

Applicants have amended claim 1 to include the limitation of claim 2 to an actuator element actuating by linear extension or contraction. No new matter has been added to the subject patent application by this amendment, since support therefor derives from claim 2, as originally filed, and from Fig. 4b of the subject Specification, as originally filed, which shows an individual actuator element (conducting polymer strip) actuating in a linear manner.

Turning now to the rejection of claims 1-4 under 35 U.S.C. 102(e) as being anticipated by Keen (U.S. Patent No. 6,326,215), applicants wish to point out that Keen teaches "... a sensor for sensing the presence of an analyte component without relying on redox mediators. This sensor includes (a) a plurality of conductive polymer strands each having at least a first end and a second end and each aligned in a substantially common orientation; (b) a plurality of molecular recognition headgroups having an affinity for the analyte component and being attached to the first end of the conductive polymer strands; and (c) an electrode substrate attached to the conductive polymer strands at the second ends. ... ." (See, for example, the Keen Abstract.). Although the Examiner asserted that Keen notes the use of a conducting polymer as an electrochemical actuator in Col. 19, line 43 to Col. 20, line 8, comprising a high-conductivity conjugated polymer, applicants fail to derive such use from the cited paragraph. In fact, Keen states on lines 43-46 of Col. 19: "Conducting polymers continue to look promising as the active elements of electronic and chemical devices such as flexible light-emitting diodes, chemical sensors, and photovoltaic devices." There is no mention of actuators nor of electrochemical actuators as set forth in subject claim 1. Therefore, applicants believe that Keen does not anticipate the present claimed invention.

Moreover, since it is believed that Keen does not anticipate the present claimed invention, nor does it disclose anything of relevance thereto, applicants believe that the Examiner has improperly cited Keen in the rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Keen (U.S. Patent No.

6,326,215), and further improperly combined Keen with Matsushita in the rejection of claims 4 and 5 under 35 U.S.C. 103(a) as being unpatentable over Keen (U.S. Patent No. 6,326,215) in view of Matsushita (JP 2000-133854). There would be no motivation to combine Keen with another reference or to select known materials on the basis of its suitability for the intended use as a matter of obvious design choice for the device of Keen, since Keen does not disclose or render obvious an actuator function.

The actuator elements of Matsushita are shown in Fig. 2(c) and Figs. 3(a) and 3(b) thereof, where only pairs of actuator elements separated by an electrolyte are taught. On page 4 of 6 of Matsushita it is stated that: As are shown in drawing 2(c), and the tabular layered product 8 is formed in the shape of a piece of a curve ... ." The combinations of opposing bending pairs of curved actuating elements (Fig. 2(c)) shown in Figs. 1(a), 1(b) 2(a) and 2(b) allow Matsushita to state that "Moving unit (6) is operated linearly by the expansion and contraction of the flexible element." (See the Matsushita Abstract.).

Moreover, if linear pairs of elements are formed (Fig. 3(a) of Matsushita), they do not actuate linearly; rather, the basic actuators of Matsushita bend (See Fig. 3(b)). Also on page 4 of 6, Matsushita states: "As shown in drawing 3(b), the tabular layered product 8 is deformed by flexion so that a portion may curve upwards the middle, and move section 6 operates upwards." Therefore, Matsushita teaches away from the present claimed invention which recites linear actuation of each actuator element. As a result, Matsushita cannot be held to anticipate the present claimed invention, nor can it be properly combined with Keen in the manner suggested by the Examiner.

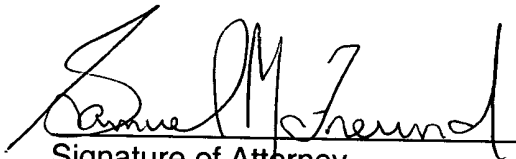
Applicants further fail to understand how the Examiner has found that either the actuators of Matsushita or the sensors of Keen inherently meet the limitation of high conductivity of the present claimed invention, since, in particular, the preparation of the actuators of Matsushita is not described and it is known in the art that the conductivity of conducting polymers is greatly dependent on the method of preparation thereof.

The Examiner has cited several additional references, but has not applied said references to the subject claims. Applicants therefore believe that no further response is required with respect to the cited documents.

For the reasons set forth hereinabove, applicant believes that claims 1-5, as amended, are in condition for allowance, and such action by the Examiner at an early date is earnestly solicited. Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

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